ELECTRICITY on the FARM

The National Magazine of Rural Electrification

MARCH, 1943

THIS MONTH—

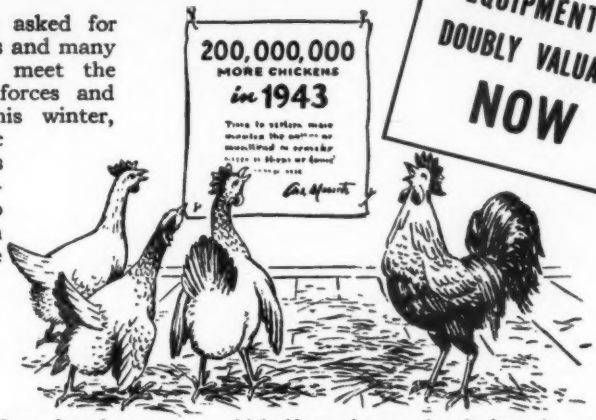
Electricity Pinch-Hits for Men
Protect Your Wiring and Motors
Timed Milking Saves Labor
How to Oil Electric Motors
Electric Brooders Aid in War
Lights Control Plant Bloom
Electric Hotbed Operation
Power Blowers Made of Plywood
Wartime Foods Taste Good
Cookies that Soldiers Like
[illegible] Patterns *(A New Feature)*

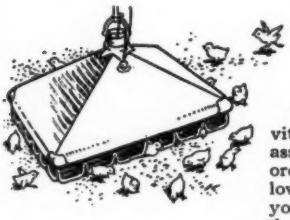
A CASE – SHEPPERD – MANN PUBLICATION

Chickens, too, have wartime production problems..

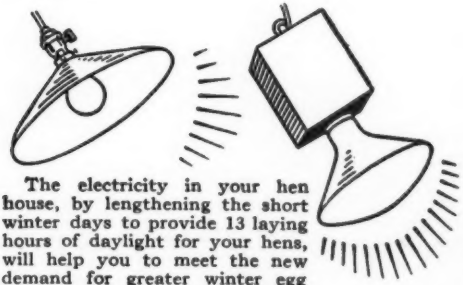
YOUR ELECTRIC EQUIPMENT IS DOUBLY VALUABLE NOW

THE government has asked for 200,000,000 more chickens and many more eggs in 1943, to meet the demands of the armed forces and lend-lease shipments. This winter, therefore, your electric equipment will prove its worth more than ever before — because with no added time and effort on your part it can increase poultry production.



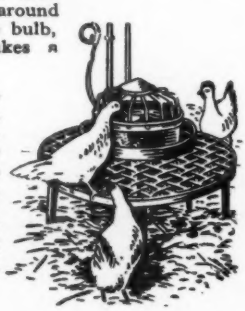


Your brooders are vital equipment which assure quick and vigorous growth and a low mortality rate for your chicks. Because they are now difficult to obtain be sure to give them the small amount of extra care that will make them last the duration. Keep your brooders clean at all times and sterilize them after each brooding for the best results; and, when not in use, store in a clean, dry place.



The electricity in your hen house, by lengthening the short winter days to provide 13 laying hours of daylight for your hens, will help you to meet the new demand for greater winter egg production. If possible, you should also have ultraviolet lighting, which, if you do not already have it, can be installed with very little change in your present lighting system. Ultraviolet light increases the shell strength and food value of eggs, and maintains the vigor and health of both birds and chicks —thus serving the same purpose as cod liver oil, which is now both expensive and hard to obtain.

As an aid to maximum egg production this winter, be sure to use your electric water warmers. Water free from ice means that your hens will be able to get all the water they want. If you have difficulty in winter with freezing water lines, wrap a piece of heating cable—which can be obtained with the proper priority—around the pipe. Even a lamp bulb, properly installed, makes a good heating unit.



Ask your County Agent, or the farm representative of your electric company for further information on how to take care of, and get the most out of, your farm electric equipment for the duration. *General Electric, Schenectady, New York.*

GENERAL ELECTRIC

DD-92-155

Editor's Chat

Machine Tools

War industries are dependent on machine tools for production. Whether we have thought so before or not, we are faced now with the reality that agriculture is an essential, mechanized war industry. The tractors, plows, combines, motors, milkers, water systems, milk coolers are the MACHINE TOOLS OF FOOD PRODUCTION. We must have them if quotas are to be met. It takes more than willingness to produce fighting foods.

War Adjustments

If your copy of ELECTRICITY ON THE FARM should be late, we are sorry. Please bear with us. We have lost help. The engraver is short handed. Some of the printer's staff have gone to war. Truck and rail transportation is over-taxed. We can urge and threaten and "cuss" and turn gray. The other fellow does, too. It is just wartime and we have to do the best we can and try to keep cheerful and helpful.

A half inch has been cut from the height of the magazine to save paper. The printed page is the same size but with narrower margins.

Labor Training in Agriculture

During the coming crop season many inexperienced workers will have to be employed on farms. What they can do will be governed pretty largely by the training they receive. A greenhorn cannot learn to milk a cow or run a mower by correspondence or in a city classroom. Farming must be learned on the farm, and the best farm on which to learn is the one on which the worker will work. The location of your hay chute, or the bailing wire on your harness may be different from farmer Smith's. In the end, the farmer must be his own labor trainer.

In training help we can take a tip from the Training Within Industry (TWI) program that has been in use for several years. Formerly the foreman *told* the new employee what to do. But no more! Foremen or special trainers have been put into classes in the factory and given intensive training on how to instruct new employees. It has worked wonders in getting more work done, better work done, in reducing accidents, in building morale and making everyone concerned happy. The American Society of Agricultural Engineers has worked over the training rules of industry to apply to the farm. Here they are:

Step 1. Prepare the Worker

Get his complete attention to the job.
(Harnessing a horse, for instance)
Find out what he already knows about the job.
Get him interested in learning the job.
Place him in the correct position.

Step 2. Present the Job

Tell, Show, Illustrate and Question.
Take up one point at a time.
Stress *key* points.
Point out safe working habits.

Step 3. Try Out Performance

Have him perform the job.
Have him tell and show you how.
Have him explain the key points.
Ask questions and correct errors.

Step 4. Follow Up

Put him on his own.
Advise him clearly what to do in emergencies.
Check his work on the job to be sure he is working correctly.
Build his confidence in himself.
Stress safety.

Put the new worker at ease. He may be nervous or scared. Point out the advantages of the job and the importance of maximum farm production to the war effort. Explain the need for extra care in operating machinery for safety and to avoid breakage. Keep your equipment in good order. Be a friend and helper to your new workman, not a critic and driver. Plan each day's work. If your worker has not learned, you have not taught him.

Studying how to train a farm hand to pitch hay, hitch a horse or pick berries may sound highbrow. It isn't. If there is a training school in your area, attend. You will be glad, and it will mean dollars in your pocket.

G. W. K.

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Electricity Pinch-Hits for Men On Liden Truck Farm

4-H Club Son and Dad Do the Wiring; Household Equipment Permits Mrs. Liden to Help in Field; Mr. Liden Does Repair Work for Neighbors.

By A. V. KREWATCH*

MR. and Mrs. Claude Liden near Federalsburg, Maryland, and their son, Conrad, wondered if electricity could do much on their farm. That was back in 1933. They knew they would like to have it, and that it would increase the value of their farm, but they just wondered what it could do for them.

Theirs is a modest little truck farm, growing sweet potatoes, cantaloupes, asparagus, tomatoes, corn, beans and peas. Many of these are essential canning crops for our armed forces. Their desire for electricity prompted their son, Conrad, an up-and-coming 4-H Club boy, to survey the area and go after a power line. In 1938, electricity was assured. Then the house had to be wired and equipment had to be purchased.

Conrad studied wiring. Mrs. Liden made hundreds of holly wreaths which were sold at retail. Soon enough money was available for purchasing the wiring materials. A wiring plan was prepared with the help of the Extension Service specialist. Mr. Liden and Conrad followed this plan, in installing the wiring. The wiring materials cost $55 and took the place of some $72 worth of oil lamps, lanterns, and gasoline lamps. (Mrs. Liden and the oil lamps are shown on the Front Cover. — Ed.) This change eliminated a bad fire hazard.

Electricity has made it possible for Mrs. Liden to have a kitchen sink with running water, so when she comes in from work in the field, the housework can be done in much less time.

Left: Mr. Liden is a good mechanic. Electricity to run a lathe, tool-grinder and drill press has enabled him to do more of his own repair work and to help the neighbors.

The water system, housed in the vegetable and potato storage cellar, pumps the 320 gallons of water used daily for the stock, chickens and the home. It pumped water for irrigating the plant beds during last year's spring drought and made possible the supply of first grade vegetable seedlings needed so badly by the Lidens and their neighbors.

A portable one-third h.p. motor is used for grinding and sharpening tools, operating a lathe, a bench saw, a drill press, a feed grinder, and a corn sheller. Mr. Liden is an experienced hand at repairing farm machinery. His neighbors call on him for help in repairing equipment and save trips to town. His service is needed now more than ever.

A saw table built and equipped mostly from available parts on the farm is doing a real job of converting salvage material into repairs for the maintenance of farm buildings and machinery,—a task urged on every farmer in the country as a war duty in the conservation of lumber and other critical materials. It is easier to keep buildings in shape by doing essential repair work than to get materials and labor for rebuilding.

The Lidens are no longer wondering what electricity can do on a small truck farm. They know. It is permitting them to spend longer hours in the field, maintain their buildings and equipment, and keep production at a high level without the extra help that is no longer available.

*Mr. Krewatch is Extension Specialist in Agricultural Engineering at the University of Maryland, College Park, Md.

Left: Good light at the desk and telephone from inexpensive homemade lamps of the IES sight saving type. They have diffusing bowls and light colored shades with white linings to give the maximum amount of glare-free light.

Right: Electricity brought this sink with running hot and cold water.

Protect Your Wiring and Motors —They're Scarce

Automatic Protection, How It Is Accomplished. What the Protection Devices Look Like and What They Do and Cost. Fuses, Non-Temperable Fuses, Fustats, Fusetrons and Circuit Breakers

By GEO. W. KABLE

IT is common knowledge to most of us that to supply a large amount of electricity we need a large wire and that for a small amount a smaller wire will do. Also, we need a large motor for heavy loads, whereas a smaller motor will do for light jobs. It is not so obvious just what will happen if we try to put a large demand on a small wire or a large load on a small motor. The wire and the motor will, of course, be overloaded. In general anything that is overloaded excessively or for long periods will break down. Wires will "break down" and so will motors.

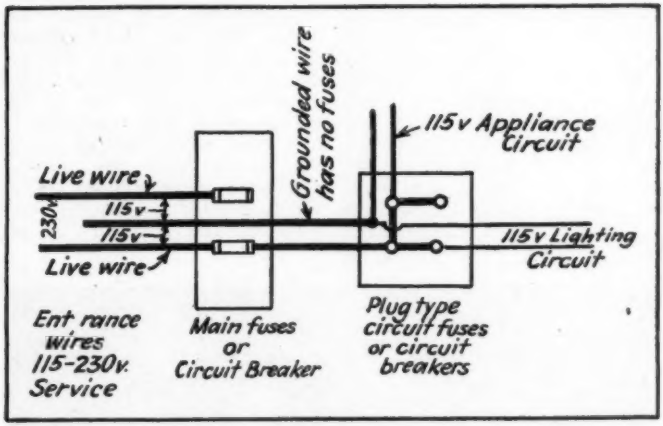
To avoid these breakdowns of wiring systems and motors, protective devices are made for insertion in the wiring system which will automatically cut off the electricity when dangerous overloads occur.

Protection for the Owner

Circuit and motor protection is *protection for the owner*. While the National Electric Code prescribes certain size fuses or breakers for given sizes of wires, and motor manufacturers recommend properly designed protective devices for each size of motor, this protection is not just to please some Code making body or to sell additional equipment. It is to safeguard your investment. Let me explain.

Wires carrying electricity get hot if they are too small. For example, the wire in an incandescent lamp is purposely made small. It gets hot enough to make light. When a farm is wired, the wires are placed in and through the walls. Possibly some of them are where hay gets against them in the barn. The wires are made of a size to carry the expected load without overheating. Then, to be sure that someone does not come along and hook an excessive load on the circuit and cause the wire to get hot, fuses or circuit breakers are placed in the wire. These "safety valves" are placed wherever there is a change in the size of wire. The main circuit fuses protect the larger wires coming into the premises and leading to the branch circuit fuse box. They take the full farm load. Running from this distribution box are wires of different sizes to supply the range, the milk house, the appliance circuit and lighting circuits. Each different size circuit wire has its own size "safety valve" to protect it.

If oversize fuses are used or pennies placed behind the fuses to keep them from "blowing", the "safety valves" have been removed from the line. You say you have done it and nothing happened? Listen! You may tie down the safety valve, or knock the props out from under the stairs, or throw away the fire extinguisher and leave the water barrel empty, or lead the "gentle" bull with a rope—and nothing happens. The Lord has just been good to you. It's the one time when it does happen and everything is lost that will cause you the anguish.



This is a diagram of an entrance service and distribution panel, showing where fuses are used. The main fuses are usually 60 or 100 amp size and are of the cartridge type. The lighting and appliance circuit fuses are of the plug type and 15 to 30 amp sizes. Similar circuits may be run from the other main entrance fuse. 230 volt circuits to range, water heater and motors over ½ hp run from the two main fuses and have their own fuses where the wire changes size. Note that there are no fuses in the grounded wire even where it changes size. The fuse must be selected from the smallest wire it is to protect.

What Happens in Overloads

Here is what might happen to an unprotected circuit. House wire is made of copper wire covered with rubber insulation. The size of the copper governs the amount

of current the wire will carry, just as the size of a pipe governs the amount of water it will carry. The thickness and composition of the rubber governs the voltage or "pressure" the wire will hold, as the thickness and composition of a pipe govern the pressure of water it will hold. If the copper is overloaded and gets hot, the heat may set fire to the rubber or the taped joints and surrounding materials or to adjacent rubbish; or the insulating property of the rubber may be damaged so it will no longer hold the electric pressure, and we get short circuits —arcs—flame.

Circuit fuses *protect the wires* through the walls and buildings from overloads but they do not protect motors from overloads. The motor must be separately and individually protected. If it is not, an overload from too heavy a job, or from failing to oil the motor, or from allowing it to get clogged with dirt, may cause the wires in the motor to heat and the insulation to be destroyed; and you have a burned-out motor.

Wires and motors and repair facilities are too scarce to take any chances on burn-ups or burn-outs in wartime,—or any time for that matter.

Circuit and motor protection devices in some cases are similar but their application is quite different. The two subjects will be handled separately.

Circuit Protection Devices

Circuit protection devices are of two kinds, namely, fuses and circuit breakers. Either device is used only in the underground or "hot" wire of a circuit, the grounded wire going through unbroken. The "hot" wire is cut and the cut ends connected through the protective device, that device then forms a weak link in the wiring system. The *fuse* "link" is of a metal which melts and opens the circuit when the current reaches a predetermined value. For example, the common 15 ampere fuse link melts or "blows" when the current through the circuit exceeds about 19 amperes. (15 amps plus 25%). The blown fuse must be replaced by a new one. The "link" in the *circuit breaker* is a bi-metal strip that bends as it gets hot. The bending is just enough to release a switch when the rated amperage of the breaker is exceeded. The switch can be reset after the strip cools.

Fuses, Fusetrons and Fustats may be used in circuits of lower voltage than their rating provided the proper amperage unit is selected. For example, they may be used on 230, 115, or 32 volt circuits. Circuit breakers must be used only at the voltage for which they are designed.

CARTRIDGE FUSES. Cartridge fuses resemble gun cartridges.

60 amp cartridge fuses. The one on the left is a one-time fuse. At the right is a renewable fuse. The cap at the bottom with a slot in it is unscrewed and the melted link slipped out and replaced by a new one.

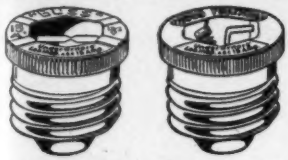
They are usually used in sizes over 30 amperes although they are made as small as 1 ampere for use in automobiles, etc. They are inserted in clips. Some cartridge fuses are renewable, i.e., they may be taken apart and new links substituted for the old ones that are burned out. They are more costly and are seldom used in the smaller sizes in houses or on farms. Cartridge fuses are used as main circuit and range and water heater circuit fuses.

PLUG FUSES. Plug fuses are round and screw into a threaded base to complete the circuit. They are used for branch circuits and are available in sizes of 10, 15, 20, 25 and 30 amperes. The screw bases are all the same so it is possible to put the wrong size fuse in a circuit.

NON-TAMPERABLE FUSES. To prevent using the wrong size fuse in a circuit, non-tamperable fuses may be used. The electric industry refers to them as type "S" fuses. An adapter is screwed into the fuse socket. Once the adapter is in, it locks and cannot take fuses

An older style entrance, showing the circuit wires and fuses. The box at the left contains the main switch and 230 v. fuses. The panel box at right has plug fuses in the live wires of eight lighting and appliance circuits, with heavy wires leading out to range and motor circuits. Newer type panels have "dead fronts" where the wires are all enclosed and only the fuses show.

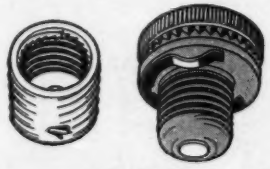
any larger than the rating of that particular adapter. The fuse itself



Left: An ordinary 15 amp plug fuse. It is marked 15 A. on the top and usually also on center contact at bottom. Right: A 15 A. Fusetron. It combines a fuse with a time-lag thermal breaker. It is used in place of a fuse and also for motor protection.

may be replaced when blown, but not with a larger size.

TIME DELAY FUSES. There are times when fuses blow without having the circuits dangerously overloaded. Take, for instance, a No. 14 wire circuit protected by a 15-ampere fuse and carrying, say 5 amperes in lighting load or a toaster. Then someone turns on a washing machine motor. That motor will use only about 6 amperes when running fully loaded, which would be safe for the circuit. But in starting, the motor may draw up to 40 amperes for a few seconds, which would blow the fuse. That momentary current, however, would not injure the wire. Time delay or time lag fuses are made which will carry 100 percent overload for about 30 seconds or even 200 percent overload for about 10 seconds, but will blow on normal overloads lasting a few minutes, like ordinary fuses. They are known by such trade names as Fusetron, Therm-A-Trip or Thermofuse. With motors being used on many household and farm devices like refrigerators, vacuum sweepers, water systems and milkers, these time delay fuses (or circuit breakers) are desirable.



This is a Fustat. The adapter at left screws into the plug fuse base and the sharp prong shown on the front locks it in place so it cannot be removed. The Fustat at right screws into the adapter. The adapter will take only one size Fustat, so the circuit cannot be over-fused. The Fustat itself is replaceable.

FUSETRONS AND FUSTATS. These devices combine a fuse and a delayed action thermal unit in a fuse casing. The fuse will blow instantly on short circuits or excessive overloads but will hold on overloads under about 500 percent. The thermal unit will hold while the motor starts but will open the circuit if an overload persists long enough to endanger the wire.

The Fusetron looks like a fuse

Cutaway view of Fustat (Fusetron is the same). The fuse-link at the top melts or "blows" quickly on short circuits. The time delay device will open the circuit if an overload persists long enough to soften the solder so the spring can pull out the pin.

and screws into the regular fuse base. When it blows it must be replaced with a new one.

The Fustat has exactly the same mechanism as the Fusetron but is made up with a non-tamperable or "Type S" base.

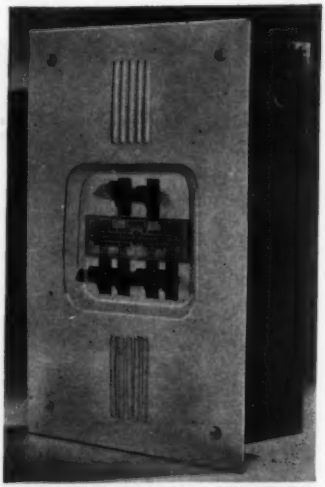
COMPARABLE COST. The plug fuse normally costs 5c; a Fusetron 7½c; non-tamperable fuses 5c and base adapter 5c; Fustat, 15 to 30 amp sizes 7½c, 0 to 14 amp sizes 15c and adapter 7½c.

CIRCUIT BREAKERS. About fourteen years ago the first circuit breaker panels were installed in farm wiring. A circuit breaker takes the place of a fuse and a switch. They are made in sizes for main entrances, for range and similar circuits and for 15 to 35 ampere house circuits. The breaker combines a quick break on short circuits with the time delay feature of the thermal cutout. When a breaker opens it may be reset as soon as it has time to cool. There is nothing to replace. It is closed like snapping a switch. These circuit breakers are not being made for civilian use at present. The price of the 15 to 35 amp breakers when available was about $2.50.

REMEMBER THIS: When fuses blow or circuit breakers open, the trouble is not in the fuse or circuit breaker, but some place in the wiring system. Find the short circuit or the overload and correct it before replacing the fuse or closing the breaker.

If you have difficulty locating Fusetrons and Fustats, ask your power company or coop. to help you.

Note: The second part of this article will be on motor protection.



Upper: Circuit breaker assembly or no-fuse load center. The upper left switch is the main switch and breaker; upper right is range breaker; the four below control lighting and appliance circuits.

Lower: A 20 amp Quicklag De-ion circuit breaker. It combines a switch with a quick-break device which opens when there is a short circuit and a time-lag device which protects wiring circuits or motors from persistent overloads. After the breaker trips, it can be reset when it cools by pulling the handle first to the "off", then the "on" position. These breakers are combined to make up no-fuse load centers.

Save for reference

HOW TO OIL ELECTRIC MOTORS

Too Much Oil Bad as Too Little. Learn to Oil Right; It's Easy. Different Types of Bearings. Kind of Oil to Use

By FORREST B. WRIGHT

NEW motors are hard to get, therefore, it is highly important that we take the best of care of those which we now have.

A motor is a machine which requires very little attention, but the attention which it does require is absolutely necessary if it is to be kept in service. A mistreated motor may be damaged beyond repair in just a few moments.

Fig. 1 ▲

One of the most important requirements for keeping electric motors in good condition is proper lubrication of the bearings.

Instructions for lubrication are usually provided by the manufacturer and attached to the motor, or the machine which it drives, at the factory. If these instructions are not attached or have been lost, it is sometimes difficult to determine how to lubricate the motor. Since it is so important that the bearings have *exactly* the proper lubrication the following instructions are offered as a general guide. The requirements for some individual motors may vary some from these instructions given here.

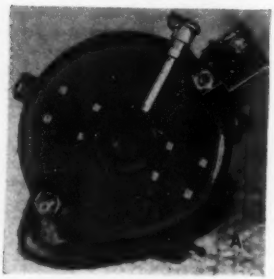


Fig. 2 ▶

Fig. 3 ▲

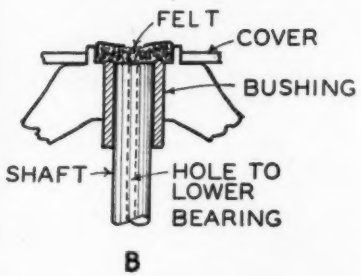
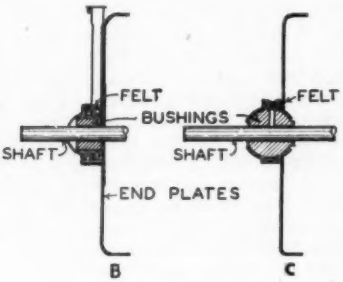


Fig. 4 ▶



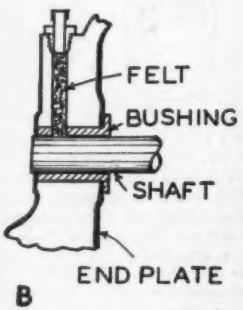
General Instructions

1. Use only the proper grade of clean lubricant. Light oil should not be used where heavy oil or grease is required, or vice-versa. Diluted or dirty lubricants will do more harm than good.

2. Use the correct amount of lubricant. Do not put 10 drops in a bearing which requires only 5 drops. The extra oil will only run out and do damage to the motor windings. Over-oiling a bearing is almost as bad as under-oiling.

3. The frequency of lubrication is important. Use the correct *amount* of the proper *grade* of lubricant at the exact *time intervals* given in the instructions.

If the instructions do not give the time intervals then the operator must use his own judgment. Generally speaking, for any par-



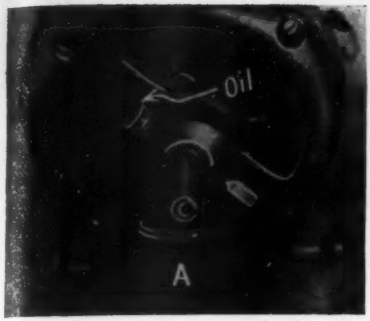


Fig. 5 ▲

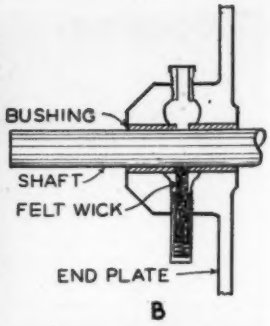


Fig. 6 ▶

ticular motor, the more hours per day it runs the more frequently it should be lubricated. On the other hand, if a motor stands idle for long periods of time, oil may evaporate or leak out of the bearings, in which case it should be oiled before it is used again. Sewing machines and fan motors are good examples of motors that frequently stand idle long enough for the oil to dry out of the bearings.

When complete instructions are not available, a good rule is to lubricate a motor lightly and frequently rather than heavily and infrequently. Two or three drops of oil once a month may be better than fifteen or twenty drops every six months. If a motor shows oil or grease on the end plates near the bearings it is an indication of over lubrication. The remedy is to reduce either the quantity or the frequency of lubrication.

Fig. 1. Use the right amount

of the correct grade of oil at regular intervals.

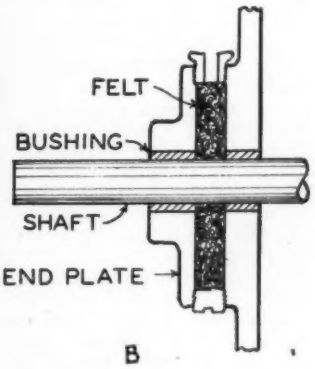
The following specific instructions for the motors illustrated are intended as a guide for oiling similar motors where the manufacturer's instructions are not available.

Motors Which Require Frequent Lubrication

Bearings of the types illustrated in figures 2 to 5 are so designed that they will hold very little oil. It is, therefore, necessary to oil them frequently. The bearings of figures 6 and 7 have more capacity, therefore they need to be oiled less frequently.

Figure 2. This is a very small motor such as is used on small fans, victrolas, sewing machines, etc. The bearings may be constructed as shown at B or C.

Add two drops (not squirts) of light oil, SAE-10, or sewing machine oil, after each 20 hours of operation. If the motor has stood



idle for a long period of time, oil before using.

Figure 3. This is the top of a vacuum cleaner motor. The shaft is vertical. Both bearings are oiled from one hole as shown at B.

The plate says "Put only 3 drops of oil in this cup after each 10 hours use." The oil should be SAE-10. It can be purchased in quart cans from service stations.

Figure 4. A vacuum cleaner motor. Add two drops of light oil, SAE-10, to each bearing after each 10 hours of use.

Figure. 5. A type of motor used on washing machines, grinders, churns, drill presses, etc.

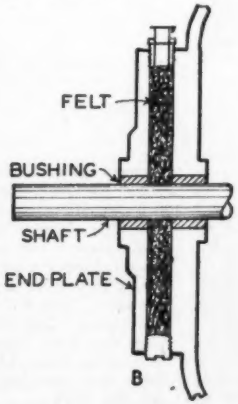
Add 6 drops of medium oil SAE-20, to each bearing every two months.

Figures 6 and 7. These motors may be found on washing machines, ironing machines, grinders, churns, drill presses, etc.

Note that the oil reservoirs are larger than those on the previous motors. This means that more oil can be added each time and the frequency of oiling is less.

. . . . . (More on page 22)

Fig. 7 ▼



Lights Control Blooming of Plants

By ALVA L. DAY
Hood River, Oregon

EASTER lilies bloom under natural conditions in June and July when the days are long and warm. Under the usual greenhouse methods, the bulbs are put into the pots, during the last week of December, and forced with high temperature around 90 to 100 degrees with the hope that the plants will bloom at the right time to be at their best for Easter Sunday. The growth can be governed to a great extent by an experienced florist, however, the lilies which bloom too early or too late are generally a loss. The blooming period of the lily is about one week, allowing the florist a very short time for governing the growth.

February 1st, an experimental bench of about 500 lilies were about three inches high and making very slow progress. Under the usual system of forcing with heat, the plants could hardly be expected to be in bloom for Easter. The plants were arranged so that six lights would supply good coverage and six 60 watt lamps under tin shades were installed. The lights were turned on for six to eight hours per day for about a month. The lamps were then changed to 75 watts each and the time was cut down to four hours per day as days became longer.

When the lights were installed, the temperature was reduced to 70 degrees, which is a more hardy growing temperature and the saving in fuel was many times the cost of the lights.

The plants showed a remarkable growth. The stalks grew tall and strong with dark green leaves and four to six buds on each plant. As the plants were making too rapid a progress the time of lighting was reduced. The lilies responded very well to regulation and about a half dozen bloomed a week before Easter. Those early blooms were put in the show windows as exhibits for advertising. The balance came into bloom about one to three days prior to Easter and were in full bloom for the Easter trade. The blooms were very large, being 5 to 5½ inches in diameter and 6 to 6½ inches in length, with four to six blooms on each plant.

The total cost of the current for lighting from February 1, to April 10th was $6.75.

Chrysanthemums bloom normally in the greenhouse in November and December when there is an abundance of flowers and prices are low. From August 27 to September 11 lights were turned on 4 to 5 hours per day over one bench. The lighted plants grew taller and stronger and the leaves had a darker green color. The plants started blooming about the 15th of December after the unlighted lot had finished blooming. They continued to bloom through January and until the middle of February.

Some plants bloom regularly during the long days of the year and some during the short days. By using lamps to regulate the length of day it is possible to speed up the blooming of long-day plants and to delay the blooming of short-day plants.

Upper: Easter Lillies with their blooming mechanism regulated by 60 to 75 watt lamps deliver their blooms just before Easter. There were four to six flowers to a plant. Lower: "Mums" for Christmas. Their blooming was held back by providing summer-length days into the fall with electric lamps.

Fertilizer for Fish

Farmers having fish ponds may be especially happy this year at having this extra source of food for home use and for sale. Fish feed on small aquatic plants and it has been found that the growth of these plants is greatly stimulated by fertilizing the pond. Proper fertilization may yield around 500 pounds of fish per acre, an increase of 100 to 400 per cent. Fertilizing sometimes gives better results than restocking. Use a 6-8-4 fertilizer broadcast on the water around the edges of the pond. Apply every four to six weeks during the growing season. About 100 pounds per acre should be used.

Eggs to Order

Harry W. Titus of the U.S.D.A. says hens' eggs can be produced to order. For shell color and consistency of whites you choose the proper breed. Shell color may be white, light or dark brown or blue. Color of yolk and the vitamin A, B and D content as well as iodine and copper may be controlled by feeding.

Electric Brooders Aid War Production

An Account of Use, Costs, Mortality, Labor and Money Saving of Electric Brooders. Comparisons with Coal and Oil Brooders. Statements by Farmers Who Have Had Experience. January War Production Contest Letters

Electricity Bests Coal and Oil Brooders

• When we started with our electric brooder we had on hand a hard coal stove. We started both stoves at the same time putting 500 chicks under each brooder. As this electric brooder was the first one to operate in the community, we put it on a separate meter to check the cost. When chicks were old enough to do without heat, the operating expenses were checked. The electricity cost $5.00; the hard coal $9.00. The chicks feathered out better and faster under the electric brooder and also were out on range sooner, as they were accustomed to eat away from the heat.

Because the electric brooder took so little care we bought four more the next Spring. We wired with heavier wire from meter to brooders so the extra load would be taken care of.

We bedded with peat moss and also shavings. We like peat moss as it absorbs the heat better than the shavings did, but the peat moss was hard to get on the market.

The current was off the first week of April on account of the worst sleet storm in history which lasted for 48 hours. We put jugs of hot water at each end of the brooders twice a day and put several sacks on top of the brooders and let them hang down to the curtains. By so doing the chicks went in and out just as usual. Out of 2,500 chicks we lost 73. It was quite a worry until the current came on as that was our first experience with current being off. After that it was no worry as the chicks kept on growing.

The next year we bought a farm without electricity, so we bought three kerosene stoves, the best make, to use that Spring. By next Spring we were all wired for electric service again.

We put these electric brooders against the three oil stoves, starting out with 3,000 chicks. The only time spent on electric brooders was adjusting the heating elements to 90 degrees and turning it down as the chicks grew older. I put in 20 to 25 minutes each morning cleaning the oil stoves and making sure everything was safe to leave. My husband filled the tanks once a day. Again the chicks under the electric brooder were out on range earlier.

As the electric brooders are hard to get on account of the war, I will still have to operate my three oil stoves and my three electric brooders but I hope some day I will have all six electric. It takes more work and worry with oil stoves and my insurance is higher.

When we blood-tested last Fall, the pullets that were raised with electric brooders were better developed, and they started to lay three weeks ahead of the others.

MRS. HOMER BOTKIN,
Route 1, East Liberty, Ohio.

Raises 90 to 98 Percent of Chicks

• Several years ago, my husband and I decided to buy a small farm and engage in intensive poultry raising. We had already decided to purchase a certain type oil-burning brooder. Little did we know what we were letting ourselves in for in "chores", worries of what might happen in the night, dread of finding dead chicks under the hover and of possible fumes in the brooder room. However, we worried along two or three seasons trying first one type of brooder and then another, until the thing happened, which has happened to so many brooder houses.

One evening while we were busy with the evening meal, our brooder stove exploded and the brooder house burned to the ground. Discouraged, we had about decided to quit, when the local Electric Company was persuaded to extend its lines to our community, and we purchased an electric brooder. That was the most sensible purchase we have ever made. When using oil-burning brooders, we thought we were doing well if we raised 80 percent of chicks placed in the brooder house. More often it fell to 77 percent and even as low as 66 percent. The first season we used the electric brooder, we raised 97 percent; second season 98 percent and have never done worse than 90 percent. Now it is not necessary to visit the brooder room more than three times daily. We

scarcely ever find dead chicks under the hover, for with even temperature at all times, they never crowd. Chicks grow off fast because they are comfortable at all times.

The saving in chicks alone, has paid for the brooder long ago. We have used our brooder eight seasons, and have never paid out one cent for repairs, whereas, we had to replace our oil burners every two years.

For cleanliness, dependability and greater profits, with less labor and inexpensive brooding, I'll take the electric brooder every time. It is the safest and cheapest.

MRS. W. O. LILLY,
R.3, Box 504, Louisville, Ky.

Future Farmer Raises Poults in Under-Heat Brooder

• I am a future farmer. Five years ago my parents started in the turkey business, and I am in partnership with them. I have electric cable heated brooders. The heating cables are under the ground. The rooms are 3 feet by 6 feet with 3 feet by 6 feet cool room next to it. We put about 110 baby turkeys in each 6 feet by

Henri and his electric-brooded poults.

6 feet space. There are 27 rooms on each side of the brooder. The cables heat only half of the rooms, which means that half of the room is heated at the right temperature, and the other is cooler, so if they are hot, they can go to a cool place. I have lights on in each room day and night for one month. The turkeys grow big, in a short time. They are beautiful. Every year we raise 5,000 turkeys and believe me they are the best turkeys around here.

This electric brooder saves money because now there is no help. At night one person can take care of 5,000 to 10,000 turkeys easy with this system. My brother is in the Army. I am the only one who helps my parents.

HENRI HONTHAAS,
R. 2, Box 165, Escalon, Calif.

Chicks for War in the Attic

• 1942 found me with no brooder house but filled with a great desire to do my bit to swell the Nation's egg basket and poultry pen for War Production.

I had a large attic room full of light and sunshine, so snug and warm because it is properly insulated.

I bought a 200 capacity electric brooder. On February 14th I put 100 healthy chicks from hatchery in this brooder upstairs. With no exposure and very few extra steps, I greatly enjoyed seeing these chicks develop.

No one ever detected any odor from the room as plenty of ventilation and sunshine and all necessary changing of droppings board prevented all that.

I kept books on this lot of chicks. So after selling 50 broilers for 50c. each, using all I needed, I had 40 pullets as a reward for my work. These began laying at five months and it was pleasant to sell eggs all through the high price seasons from these hens. Very few, if any, did I sell for less than 40c, even 60c for some.

Any farm woman may use an attic room if she, like me, has no brooder house ready this spring for her early brooding.

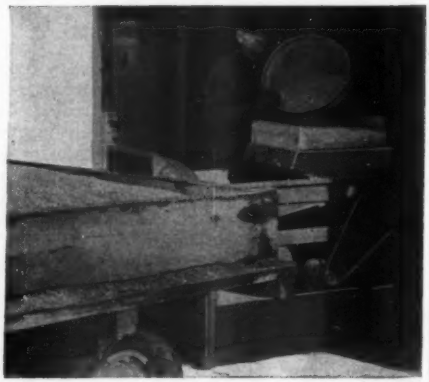
MRS. NORMAN DRYDEN,
Eaglevile, Tenn.

Schoppels Clean Seed and Keep Warm Electrically

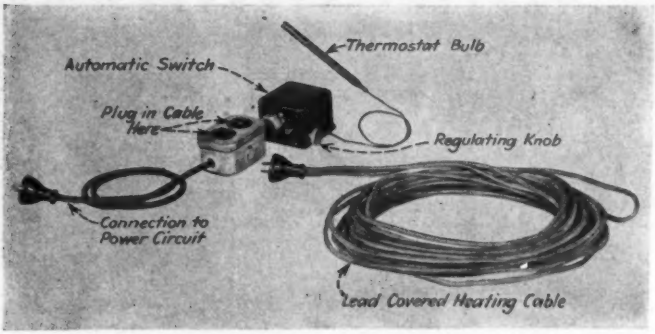
Recleaning soybeans for seed is a simple matter for Andrew Schoppel & Sons of Wanata, Indiana since they put a quarter horsepower motor on their No. 2 cleaner. The same outfit is used for cleaning wheat, rye, oats and clover seed. The little cleaner runs continuously at constant speed and does a uniformly good job of seed cleaning. It is an easy task for one man with the small motor.

A new highway past the farm furnished the impetus for more farm electrification last year. This highway cut through the farm so close to the buildings that the house had to be moved. Before moving a full basement was built and has since been fitted up with electrical equipment. It now houses an automatic electric water system, the laundry equipment, a small sump pump which will automatically pump water out of basement if any should find its way in, and a Thrush water circulator for the hot water heating system. Mr. Schoppel is especially pleased with this little one-tenth horsepower hot water circulator. It gives positive heating and Mr. Schoppel says it is surprising how little fuel is needed when the hot water is quickly circulated through the radiators.

GEO. R. HARRISON



Electric Hotbed Care and Operation



This is the electrical equipment that goes into an electric hotbed. The heating cable is made in 60 ft. lengths for use on 115 volts. It uses 400 watts. The thermostat and automatic switch control the bed temperatures. The thermostat has a regulating knob for different heats. The outlet box has places for two 60 ft. cables to be plugged-in. One thermostat will control two.

THERE are a number of things in the operation of electric hotbeds which will prolong the life of the equipment and save on electricity used as well as insuring better plants.

The hotbed cable should not be kinked or bent sharply, particularly after it has been in use for a season. Such bending weakens the insulation. Be sure all wire connections in the hotbed are tight and the wire contacts are clean. Loose, dirty connections cause arcing or failure to heat. Be sure the ends of the cable are taped or protected so water or moisture cannot get in. Moisture sometimes causes shorts so you will get a shock when you touch the cable or the ground.

Salvaging Broken Cable

Inspect the heating cable for mechanical injury or corrosion of the lead sheath. If there are many breaks, new cable will probably have to be substituted. As a war emergency one or two breaks may be repaired. If the cable is short-circuited at the break by broken or wet insulation, cut and remove about two inches of cable on either side of the break. Remove another 1½ inches of the lead sheath, being careful not to injure the insulation within it. Peel the insulation back an inch and splice the wires by twisting each around the other as tight as possible without breaking. Lap the asbestos insulation over the splice, then tape securely with rubber tape, then friction tape to keep out moisture. Lap both tapes over the ends of the lead sheath. In using the cable, keep this splice above ground and protected from moisture.

Never cut off more than a foot or two of hotbed cable. The shorter the cable, the more current it will carry and the hotter it will get. It is not designed to stand up under very high temperatures. If it seems unreasonable that a long cable will produce less heat than a short one, just remember that it is not the wire that does the heating, but the electricity that flows through it. More electricity will flow through the short wire because it offers less resistance.

Remove the cover from the thermostat switch before connecting it in the circuit and clean out any dirt or wasp nests. Do it carefully. Check the setting of the thermostat in a cold place by immersing the bulb in a bucket of water at the temperature you want the current to cut off. Adjust so it will.

Store the thermostat and cable in a cool, dry place. Clean the dirt off the cable before storing.

Alkaline cinders tend to corrode lead cable if they are in contact with it.

Sun Does Most of Heating

Take advantage of all the sun you can get into your hotbed. The sun does most of the heating. The electric heat supplements it.

Tight frames and close fitting, tight sash do much to save on the electricity used. A building, fence or shrubbery tight enough to make a good windbreak also cuts down heat losses.

Double glazed sash will save as much as 20% of the power consumption over single glazed sash.

Straw mattresses or other covers will save from 20% to 40% on power on nights below freezing.

Plant growth in an electric hotbed may be controlled by regulating the heat. Higher temperatures force growth but tend to make tall spindly plants if overdone. Lower the temperature if the plants are growing too fast, and to harden them off before setting in the field. Plants in electric hotbeds usually grow much faster than in a manure heated bed. Be sure the drainage is good.

Cattle Grub Control

It is estimated that $65,000,000 is lost to cattlemen in this country every year in milk production and damaged meat and hides due to cattle grubs. Heel flies lay their eggs on the heels of cattle. Grubs hatch and burrow in. In about a year's time they have burrowed through the animal and emerge from the back. They can be easily controlled by killing the grubs in the back. The treatment is to scrub the backs of the animals at one month intervals, starting as soon as the first grubs appear in the winter and continuing for four months. Use a bristle brush and a solution prepared of 12 oz. powdered derris or cube root; 2 oz. mild soap; 1 gallon of warm water. Dissolve thoroughly.

★ *Buy War Bonds* ★

Here's how electricity can help you increase your wartime meat production

HOW CAN FARMERS step up their meat production to satisfy soaring wartime demands? How can they turn out more meat *—with hired help getting scarcer every day?*

A wider use of your electric motor is one solution. A portable motor—moved from job to job—can save both time and labor, in doing extra wartime chores.

A small portable electric motor can operate a corn sheller, feed mixer, stock-watering pump, and similar light farm equipment. A large portable motor handles heavier jobs with ease—grinding feed, elevating grain, chopping hay and straw, filling the silo, etc.

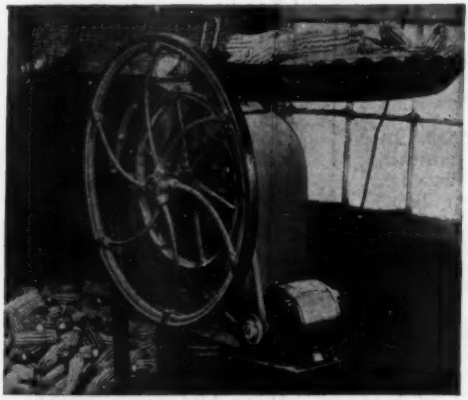
And there are many other ways in which electricity can help. An electric fence lets you fatten stock in *temporary pastures*—without damage to the other crops. Farmstead lighting gives you extra hours for grinding and storing grain, cleaning pens, repairing farm machinery.

Westinghouse wants to help every farmer increase his food production. We offer you any or all of 12 *free* Farm Bulletins describing the wartime use of electricity on the Farm. *Three* of these bulletins—"Beef Cattle", "Swine", and "Sheep"—will be of special interest to all farmers who raise meat animals.

Just check the free Farm Bulletins *you* want and mail the coupon.

HOME-MADE PIG BROODER—Provides life-protecting heat for baby pigs. Heated by one or two 100-watt lamps, such a brooder can be built quickly and cheaply by anyone. Operates for less than a penny an hour!

ELECTRIC FENCING — Permits economical fattening of stock in temporary pastures, without damage to adjacent crops. Electric fencing is easy to erect and remove. It requires little special equipment.



CORN SHELLING MADE EASY—Only a minute's work is required to attach this portable motor to the corn sheller. Shells 20 to 30 bushels of corn for 5 cents or less.

FEED GRINDER—For five cents or less, you can grind 100 to 500 pounds of grain, depending upon the kind and fineness of grinding.

Westinghouse

Westinghouse Electric & Manufacturing Co.
Pittsburgh, Pennsylvania

ELECTRICAL PARTNER OF AGRICULTURE

FREE HELP FOR FARMERS! "Farm Motors" book, giving valuable information on the selection, care, and use of electric motors. Tells how to make small and large farm motors portable. Also 12 *free* Farm Bulletins explaining how electricity will help you get *more work done in wartime.* Mail coupon, *today!*

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY (Dept. EF-33)
Rural Electrification, 306 Fourth Ave., Pittsburgh, Pa.

Please send me the free copy of "Farm Motors" booklet ( ) . . . also free Farm Bulletins on the application of electricity to the subjects checked below.

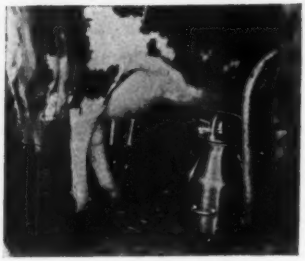
☐ Poultry ☐ Beef Cattle ☐ Cooking, Canning, and Preservation of Food
☐ Clothing ☐ Crops ☐ Dairy Cattle ☐ Sheep ☐ Home Improvement
☐ Swine ☐ Rural Electrification ☐ Handicraft ☐ Truck Gardening

Name . . . . . .

Address . . . . . .

Timed Milking Saves Labor

New Technique of Electric Milking Developed by New York Agricultural Experiment Station Has Many Advantages.



TIMING the milking machine at six minutes per cow or less and then removing the machine, will cut the milking time approximately in half and have other beneficial effects according to reports from the Geneva (N.Y.) Experiment Station. With the shortage of labor, the increasing demand for milk and the pasture and busy season coming on together, no dairyman should fail to study these findings.

The Geneva Station has been studying machine milking since 1912. Several reports have been issued, the latest one being Bulletin No. 697 issued in 1941.

The time of milking at the Geneva Station has been reduced from 11.7 minutes to 6 minutes per cow, including time to put on and remove the machine. In order to be sure, a reminder bell rings six minutes after the machine is removed from the previous cow. The machine is taken off immediately and the milking finished by stripping. Old cows gave a quart of strippings at first; in three weeks it was a pint. Then, out of the herd of 30 milking head there were only three cows that required any hand stripping. The others milk out completely by machine in six minutes; some in less time. Under this arrangement one man with two single units milks five cows in 15 minutes. It keeps him moving.

Some additional observations are of interest. Heifers milk out readily in 4 to 5 minutes. Old cows adjust slowly to faster milking, but they can be trained. Hard milking cows have become more easily milked. Milk production has held up better under this system of fast milking and the incidence of mastitis in the herd has been less than ever before.

More rapid machine milking means time saved and more milk produced per man. Each dairyman will have to work out the system for his own herd. This is a good time to do it.

Kinder Tired (1909) Is It True in '43?

This is a true story told by the late Dr. Walter Kelso, physician here for many years. It happened near Hillsboro, N. H. back in 1909.

Farmer (to physician) "If you drive out my way anytime Doc, I wish you would drop in the house and see the wife. She claims she aint feeling fair to middlin."

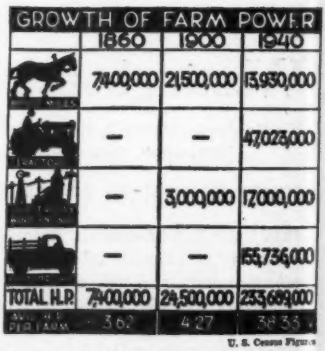
"What are the symptons?"

"Well I dunno. This morning, after she'd milked the cows, and fed the stock and got breakfast for us, and washed the dishes and done a few chores around the house, she complained that she was feelin kinder tired like. I shouldn't be surprised if her blood was out of o' order and I'd hate to have her git down sick with the busy season coming on. Mebbe you'd better give me a dose of medicine for her."

P. S. SCRUTON,
Hillsboro, N. H.

"Umbrella" Shields War Plants From Lightning

Oil and explosives plants formerly protected from lightning by lightning rods using large quantities of copper are now being safeguarded by "umbrellas" of steel wire. A building may be protected by setting a wood pole beyond either end and stretching a steel wire above the building. At the poles the wire is connected to steel rods buried in the ground.



U. S. Census Figures

Corrected chart to accompany article, "Improving Farm Labor Efficiency", December, 1942, issue, page 6.

Turbines Must "Take it"

An 80,000 kw steam turbine driven generator has recently been installed for the Buffalo Niagara Electric Corp. The steam boilers operate at 1,320 lbs. pressure per sq. in. and a temperature of 900° F. Since wood ignites at about 500° and steel turns a dull red at 1,000°, the steam pipes would quickly set fire to any wood they touch and the high pressure turbine blades operate just under red heat. The high temperature and pressure are used to gain efficiency. Materials are made to "take it."

Electrical Housekeeping

Edited by **GAIL MEREDITH**

Make Wartime Foods Good

WAR time cooks are getting ready to change meals and methods on the nose of a minute. That means keeping an eye on the press and an ear cocked toward the radio to follow national plans for rationing. It means learning to put two and two together and get meat pie; it means being adaptable, and imaginative, and good natured.

Include Leafy Greens

One of the things each menu maker is still trying to do is get into the meals "leafy green or yellow vegetables . . . one big helping or more a day; some raw, some cooked".

It is one thing to plan meals to include them, but keeping those vegetables welcome week in and week out demands considerable variety in their preparation and serving.

Perhaps you always bake squash, big, little or medium sized. Even if you do, you can scrape it from the shell some days, season it well, and add a little hot milk, then beat it up like mashed potatoes with your electric beater. Small squashes take on the added flavor of good pork sausage if you bake them with a round pat of meat in their hollow cup.

The delicate brown crust on fried parsnips makes them inviting to look at and gives a contrast in texture that makes for pleasant eating.

Corn, canned or dried can change its appearance completely by coming to the table with chopped green peppers, or baked in a custard. One time last winter I met it in a spoon bread, regular canned corn added to the spoon bread. It was so good, I'm still looking for a recipe that uses it so.

Yellow beans make plenty good eating with just the seasoning and butter you'd give them fresh, but nobody denies that turning off the liquid to add to the soup pot, and heating the beans in a little cream is a good variation. So is baking them for a few minutes with a tangy cheese sauce and a crunchy topping of fried bread crumbs.

Which brings us, as any consideration of yellow vegetables is bound to, first or last, to carrots. There is no real danger of running out of new ways to fix carrots.

When you start to cook carrots it is particularly important to think of the French proverb "Water is the foe of all flavors", a proverb in common use long before we learned not to drown out vitamins and dissolve out minerals by cooking vegetables in a kettle full of water. Try putting them into the kettle with just the water that clings to them from the washing, and a little seasoning and a tablespoon of butter. Use enough heat to turn the water to steam, then turn it very low till the carrots are done, and you'll have as sweet a dish as you could ask for.

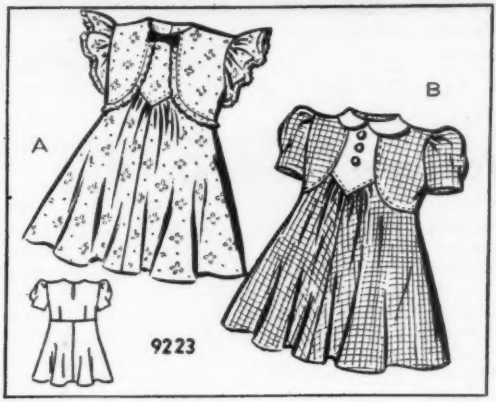
Water is the foe of all flavors.

Preparing Carrot Sticks

A French friend of mine, the one whose mother makes the pea soup I've told you about, cuts carrots up into little sticks, scarcely bigger than a match and puts them into a heavy frying pan with just enough stock to cover them. After they come to a boil, she adds butter, sugar and salt and lets the carrots simmer until they have taken up all the liquid and are quite tender.

Sometimes she varies this

Patterns for Home Sewing



4317

9206

Pattern 4317 . . . It's young . . . it's easy-to-make . . . it's smart—this housefrock that buttons down the back and has a shapely inset waistband. Sizes 14 to 20, 32 to 40. Size 16 requires 3⅞ yards 35 inch fabric.

Pattern 9223 . . . This little-girl pattern plays a dual role—make it up in both play and party versions. Sizes 2 to 10. Size 6, 1¾ yards 35 inch fabric for either version.

Pattern 9206 . . . Two favorite features in one style—shirtwaist lines and a front buttoning. Sizes 34 to 48. Size 36, 4 yards 35 inch fabric.

Patterns may be obtained from ELECTRICITY ON THE FARM, Pattern Dept., 243 W. 17th Street, New York, N. Y. Price is 16c each. Send coins.

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method by sauteing sliced onion very gently until the onion is soft, light colored and almost transparent. Then she adds them to carrot strips, stock and sugar, and lets them simmer together till the stock disappears and the vegetables are glazed.

Still a third way she makes carrots popular at her table is to bake them with dried herbs. She often does that this time of year when there are big old winter carrots to be had. First she splits the carrots lengthwise and parboils them for about ten minutes. Then she butters a shallow casserole and spreads the bottom with a mixture of marjoram, summer savory, dried parsley, and basil. She generally mixes a couple of tablespoons of the herbs and takes half for the bottom of the dish. She lays the carrots in the dish and sprinkles them with the rest of the herbs, a little sugar, and a few dabs of butter. Then she pours in just enough water to cover the bottom of the dish and cooks them for a quarter of an hour or until the carrots are tender.

Save Vegetable Liquors

This time of year most of our green vegetables must come from our lockers or out of cans. When you open a can be sure to get all the food you packed into it, by saving the liquid too. Turn it off and save it for other uses, or turn it into a sauce pan and heat it until it is half or two-thirds evaporated, then return the vegetables to the liquid that is left and heat them through. If the flavor of the vegetable is good, you can't improve on serving it with salt and pepper and a delicate splash of melted butter.

For vegetables that become monotonous or perhaps were just a little ordinary to start with, a cheese sauce, the addition of crisp, chopped bacon, or a blending of herbs make a decided improvement.

Some like greens with nothing added but salt, pepper and butter. Some like the tart taste of vinegar or lemon juice with the greens. I like to serve them with vinegar and tiny cubes of bread browned in fat. The sharp difference in texture and taste makes the greens very popular at our house.

Cabbage for Salads

Perhaps lettuce is hard to get; maybe expensive or impossible, but we can get cabbage most any time of the year. That is a leafy green vegetable we can eat raw in salads in a practically endless variety of combinations. Molded in gelatin with carrots and celery and fruits of one kind or another;

it is a salad to make today and eat tomorrow with all its goodness sealed safe inside that jellied envelope.

Shredded for a salad with slices of apple or one of your precious cans of pineapple, it should be prepared just as close to the time of eating as you can manage because the longer its cut slices stand exposed to the air, the greater the loss of some of the desirable food values.

Another Popular Cabbage Dish

When you cook cabbage, cook it fast, with as little water as you can. When I serve cabbage hot from the kettle with simple seasoning, I think it tastes so good, I wonder why we do not always have it that way. Then when I bring it to the table au gratin it is equally popular. I shred the cabbage and boil it for five minutes. Then I drain it and put it in a shallow baking dish, cover it with a medium white sauce, and then,—and this is the touch that sends the cabbage to the table with an air of opulence. . . . I sprinkle the top with a mixture of grated cheese and bread crumbs, dotted with butter and bake it at 375 until the crumbs are brown.

Most women with any gumption at all are trying to feed their families in conformity with some authoritative plan for adequate nutrition. But every woman knows you can't reason folks into eating what they should. In fact it is pretty poor business to try. But there is nothing to stop her using undue influence—in the form of dishes so attractive and appetizing they disappear before you can say 'Pearl Harbor'.

Sheets and Pillowcases

If the boys have pillow fights, stop them! If they are given to waking each other suddenly by snatching the clothes off the bed, restrain them. Your sheets and pillowcases should be treated with great respect from now on. As long as there is any wear in them, you should try and make them last.

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Sometimes a little extra care will make more than a little difference in the length of time your bed linen lasts.

It is quite likely that you've never thought about it, but the bureau of home economics reports that they have found out by test that sheets wear out first where the sleeper's shoulders rest. You can carefully prolong wear on this part of the sheet by turning the sheets end for end occasionally.

Reverse and Rotate Sheets

Has the wide end always gone at the head of the bed? Of course it has. All right. Reverse it. Put the narrow hem at the head and the wide hem at the foot one week.

You can also distribute the wear by using your sheets in rotation. Put the clean ones at the bottom of the pile each time you put away the laundry and take fresh ones from the top when you make up the beds.

Using a sheet of the right size for each bed is another way to save wear. A sheet that is too small will wear out more quickly than one that is large enough. If it is the lower sheet, you pull it across the bed hard, or try to stretch it to tuck under the foot of the mattress. When the top sheet isn't quite big enough you give it an extra tug to bring it up over your shoulders.

You have probably always been careful about mending a tiny tear as soon as it appears, and such watchfulness is more necessary now than ever. If your sheets show little snags near the edge, or at the top or bottom, look over the springs to see if there are any sharp ends sticking out or splinters roughening the rail of the bed. Bend back ends of wire with a pair of pliers, and if you do find splinters, smooth them off with sandpaper. This will cut down two sources of unnecessary wear.

Don't Use Strong Bleaches

Naturally you want a snow white wash hanging on your line. That is as it should be. But stop short of using a strong bleach to ensure that whiteness. Bleaches do affect the fabric, weakening it. Wash your sheets and pillow cases before they get too soiled

and remember that the sun is a very good bleaching agent. Very good indeed. Use sunlight to make your laundry white.

If it is still cold enough where you live to freeze the clothes on the line let them hang until they are dry. The cloth may split if you fold it when it is frozen.

Watch the ironing of your sheets and pillowcases more carefully than you ever have. When you put a sheet through your ironing machine, be careful not to let the edge roll over as it slides under the shoe. The fold this irons into the sheet along the selvedge, pressed this way again and again, may slit and tear in time.

Too much heat in your ironer or your hand iron weakens the fabric of the sheets and pillow cases even if it isn't hot enough to leave a scorch that shows. Set the thermostat for cotton if your iron has a heat control, or keep a medium heat in the iron if you are controlling it yourself by plugging the cord in and out.

It is a small point, but you can save some wear if you do not press the folds in the sheets or pillow cases.

No effort to make them last is unimportant because the textile mills are already overburdened with work for war.

Cookies for Soldiers

By MARY MARGARET LYNCH*

Your electric range can boost Army morale—Navy, Marine and Coast Guard morale, too—if you use it to bake cakes and cookies for boxes for the men. For a service man's morale is evidently accessible by the route which reaches his heart—through his stomach.

If you plan to send a cake to a man in the armed forces, select a recipe which does not require icing. Pound Cake, fruit cake, applesauce cake, marble cake and date and nut cake are suggestions. Fruit cake, because it keeps well, can be shipped great distances without harm. More perishable cakes should not be mailed for more than a few hundred miles, and should be sent by express for speediest delivery.

One good suggestion for packing a cake, is to surround it with popped corn. The corn is good to eat, light in weight, and protects the cake equally as well as paper wadding or excelsior.

Cookies ship well. Many service men prefer them to cakes because they do not become stale and often last longer. In the first World War, Scottish soldiers carried little oatmeal cookies called "sustainers". These cookies were given to them by the women of Scotland in the belief that they would provide a bit of needed refreshment in convenient form. The "sustainers" are both easy to make and good to eat. The oatmeal in them gives the cookies a nutty flavor. Here is the recipe. Test it in the oven of your electric stove. I believe that you will agree with the Scottish women who thought "sustainers" were fine soldier fare!

Sustainers

Mix together:
1 lb. oatmeal minus 2 Tb. (may be quick oats or regular oats)
2 Tb. flour to replace the oats
½ cup white or brown sugar
½ lb. butter (or butter mixed with other shortening)
½ tsp. vanilla may be added if desired.

Shape into balls the size of a

*Miss Lynch is Home Economics Teacher in the West Chester, Pa., High School.

large walnut and bake in a 350 degree oven for about twenty minutes. The sustainers do not spread. They become crisp when cool. Should be stored in a covered can. Keep best under lock and key!

Keep the Washer Running

1. *Use*—Before you plug in the cord for the washer, make sure that the control switch is turned off, and before you turn it on, look to see that the machine is out of gear. This lets the motor get started without a load and so avoids a big upsurge of starting current and the danger of blowing a fuse.

See that the strainer in the drain outlet is in place ready to catch any stray buttons that might otherwise slide down into the pump.

Fill the tub to the water line and follow instructions about the amount of clothes for each load. If you are careless about overloading the machine, you may strain the mechanism of the washer and overheat the motor.

Most modern washers will wash ordinary clothes clean in from five to ten minutes. Very dirty clothing takes longer. The correct washing time is set down in the instructions you got with your machine. You can help out the washer by soaking all white clothes before you turn them into the suds, and by giving very soiled clothes a half hour soak in warm soapy water. Shortening the washing time lessens the wear on the washer and prevents wasting current, in case you live in an area where the war demands for electricity are constantly edging up on the supply.

2. *Care*—Disconnect the washer cord from the convenience outlet before you begin the cleaning. Drain the water from the tub, taking special care that all the water is out of the tub and hose. Wash the tub carefully inside and out. Lift out the agitator or suction cups and wash the underside as well as the post to get it free of lint or soap curd. If you live in a hard water area, you can remove the deposit from the sides of the tub by rubbing it with a soft cloth wet with vinegar water. Four tablespoons of vinegar to a pint of water make a good cleaner.

When the tub is clean and dry, leave the lid slightly ajar for ventilation. Wash the rolls of the wringer, wiping them dry. Leave the wringer out of gear without pressure on the rolls. This saves both rubber and the springs which control the tension.

Oil the motor and gears as they need it. Learn when to oil the washer, and where to do it. Learn what kind of oil to use and how much. Your instruction sheet will tell you.

Guard all the rubber on your washer with extra care. Keep it free from any grease or oil. Be careful not to let the washer stand in the heat of the sun or the stove. Heat and sunshine are hard on rubber.

3. *Storage.* Protect the washer from dust and dirt. If you have to leave it in a very cold place, take extra precautions about drawing off every bit of water. Roll it into your warm kitchen for several hours before you start the motor, or if you are hurried, fill the tub with hot water and let it stand. This will soften the grease in the gear case and may prevent your burning out the motor.

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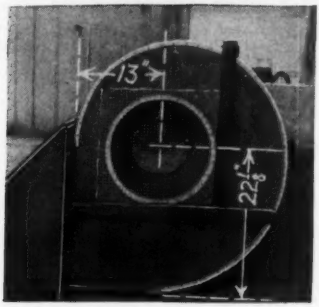
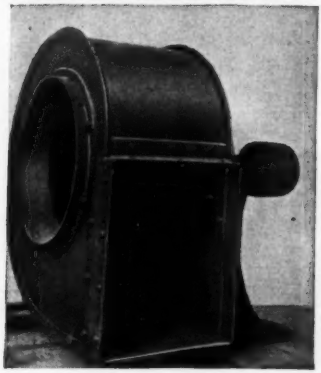




Top: Rotor made of waterproof plywood. It has 24 radial blades. **Center:** Suction side of the blower housing. The opposite side is closed and the rotor shaft extends through to a supporting framework on the opposite side. **Bottom:** A typical 24-in. multi-vane steel blower. **Upper right:** Back of the 24-in. fan showing the shaft and bearings and the V-belt drive from the quarter horsepower motor. **Lower right:** Looking into the suction side of a 48-in. blower. Note how the blower blades are set in mortises cut in the rotor sides. Mortises and blades must be cut accurately to a perfect fit. In this size blower, the shaft extends through the rotor which is tied to a collar on the shaft on the suction side with turnbuckles. A steel channel bolted to the blower housing supports the shaft.

BLOWERS are beginning to have a variety of uses on farms. They are used in vegetable driers, in mow-type hay driers, for getting the moisture out of shelled corn or ear corn and they can be used in some kinds of heating and ventilating systems. With such fans on the priority list, the Agricultural Engineering Department of Ohio State University (Columbus, O.) has designed and tried out a blower made of plywood. A blueprint giving detailed plans and dimensions for a blower with a 24 inch rotor is available from the University at 15¢. The accompanying illustrations give an idea of its construction.

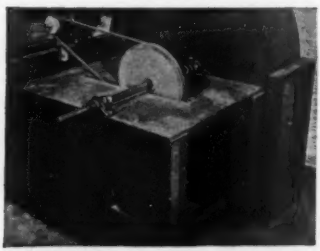
Blower Capacity and Construction Details

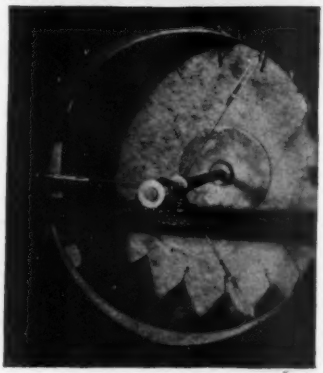
The blower is proportioned very much like commercial blowers made of steel. The 24" size is operated at 370 to 600 rpm by a one-quarter horsepower motor. The higher speed is used when operating against air pressure, and the lower when there is a free discharge. The blower capacity is about 1000 cubic feet of air per minute.

The sides of the rotor are made of ½" plywood with grooves ¼"x¼" accurately cut with a power table saw. The grooves are radial. Blades 3"x6½" of ¼" plywood are glued into the grooves. There are 24 blades and the rotor is held together with 4¼"x7½" bolts, one behind each sixth blade. The sides of the housing are made of ½" plywood and the curved cover of 26 gage galvanized iron. The radius of the housing increases gradually from 13" to 22⅜".

The rotor is carried on a hub 3" long with one end welded flush to a circular plate of ¼" sheet metal, 12" in diameter. This plate is bolted to the solid side of the rotor. The hub is bored for a 1" shaft. The shaft is 24" long and both supporting bearings are outside of the farm housing on a 2"x4" framework. The framework is behind the housing in the illustration.

While these blowers are not as sturdy as those made of steel, they have stood up well at reasonably high speeds. All plywood used should be of the waterproof type. The rotor needs to be carefully balanced so as not to put unnecessary strains on it when running. Motors larger than ¼ hp should not be used, and the motor should not be overloaded in order not to overload the fan. A 48" fan has just been made at the University and shows promise.





Oil Electric Motors

. . . . . (Here from page 9)

Add 10 drops of medium oil, SAE-20, to each bearing every three months.

It is very important on all of these motors that the felt packing be kept in place. In figures 3 to 7 the felt must touch the shaft.

The next article will be a continuation of oiling instructions for other types of motors.

By JEROME J. HENRY

Give Him a Broomstick —He'll Fly

"Give de Seversky a broomstick and he'll fly anywhere."

That is what is said of Major Alexander Prokofieff de Seversky, who presents an analysis on "War in the Air" at 7:45 o'clock, EWT, each Saturday over NBC.

Major de Seversky was born in Tiflis, June 7, 1894, and received his early training at the Imperial Naval Academy of Russia.

Don Ameche, radio's first matinee idol, is back on the airwaves, heckling his feud-friend, Charlie McCarthy, after a year's absence from the program of the little wooden man.

In the first World War, as a member of the Russian Naval Air Service in the Baltic Sea and while on a bombing expedition to the Gulf of Riga, his plane was riddled with German bullets. His observer was instantly killed. Major de Seversky managed to return the crippled ship to home base but not before one of the bombs in a rack exploded, taking with it a portion of his right leg. Doctors completed the amputation, placed an artificial leg on the stalwart de Seversky frame, and before long, with the Czar's permission, he was back in the fray commanding a bombing squadron. He bagged an additional 13 ships; for this and other contributions to Russian warfare, Czar Nicholas II presented him with the Gold Sword, one of Russia's highest warfare decorations.

In 1918 he came to Washington as assistant to the Naval Attache of the Russian Embassy in charge of aviation matters. Three years later he was made consulting engineer for the United States Air Force by special appointment of the Secretary of War. This was considered a great tribute to the Russian because he was not yet an American citizen. His final citizenship papers were obtained in 1927.

He is married to attractive Evelyn Oliphant, who comes of a prominent New Orleans family. He has received the internationally famous Harmon Trophy for outstanding performance in aviation.

Two Debuts in One

Josephine Antoine, currently starred on the "Carnation Contented" programs had an exciting afternoon in January, 1936.

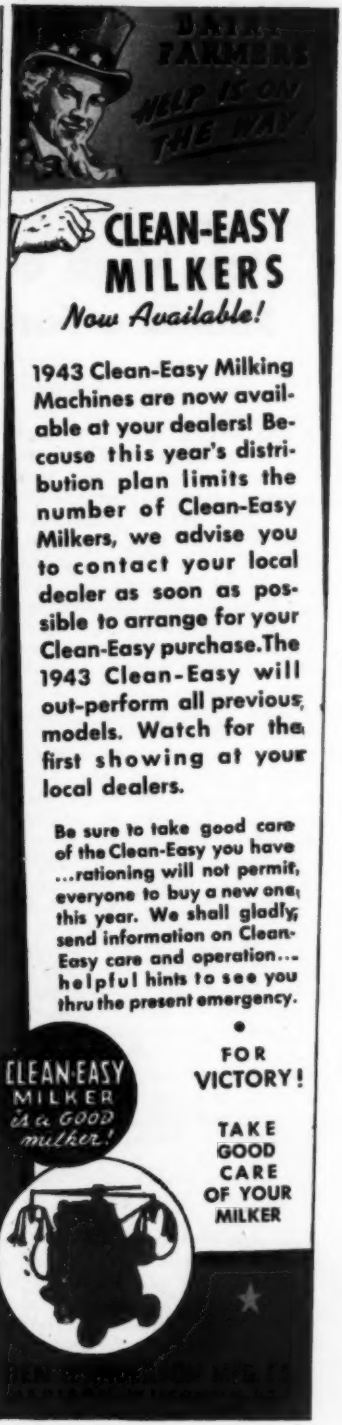
It was the time of her Metropolitan Opera debut. As she stood in the wings ready for her entrance, she noticed some men whom she believed to be stagehands testing microphones. She knew that her voice would fill the auditorium without benefit of mechanical contrivances, and she went on to the stage, wondering if the Met officials doubted her ability.

It wasn't until the first act had ended and her first steps to operatic success has been acclaimed that she learned that the "stagehands" were NBC engineers, and that she was the first prima donna ever to make her debut at the Met simultaneously with a radio broadcast of the performance.

Conducts Big Little Band

Horace Heidt, noted bandleader, collects miniature musical instruments.

Years ago, while in Paris,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HELP IS ON THE WAY!
CLEAN-EASY MILKERS
Now Available!
1943 Clean-Easy Milking Machines are now available at your dealers! Because this year's distribution plan limits the number of Clean-Easy Milkers, we advise you to contact your local dealer as soon as possible to arrange for your Clean-Easy purchase. The 1943 Clean-Easy will out-perform all previous models. Watch for the first showing at your local dealers.
Be sure to take good care of the Clean-Easy you have ...rationing will not permit everyone to buy a new one this year. We shall gladly send information on Clean-Easy care and operation... helpful hints to see you thru the present emergency.
FOR VICTORY!
TAKE GOOD CARE OF YOUR MILKER
CLEAN-EASY MILKER is a GOOD milker!

Heidt saw a musician playing a tuba of tiny dimensions. With considerable persuasion and a goodly number of francs, Horace acquired the tuba. Later acquisitions were a miniature fiddle, singing guitar, sax, harp, piccolo, xylophone, cymbals, accordion, piano and trumpet.

These instruments, in spite of their smallness, have plenty of tone, and each Christmas Horace lends them to the members of a band for a special holiday concert. He uses a toothpick for a baton, and the band plays "The Toy Maker's Dream."

Then the instruments are put away in Heidt's cabinet until the next Christmas.

How Much of an Electrician Should a Farmer Be?

From a Broadcast By **ED. W. MITCHELL**
WGY Farm Advisor

THE answer to the question, How Much Of An Electrician Should A Farmer Be, keeps changing every day; because with every day electricity assumes a more important part in our farm economy. It is hardly necessary to point out that when war takes men from the barn and field, women have to take their place on that front. Electricity has to step into the house to help with her work so she can do it. As help becomes scarce and high, electric power is about all the farmer can turn to as a substitute. He must learn to get along with it just as he had to learn to get along with hired help. As gas and rubber becomes more and more of a problem and war calls out our local service men, it becomes increasingly necessary for the farmer to learn to make his own repairs, or else his business may experience serious and costly delays. Surely these are reasons enough for a farmer to become as good as electrician as he can.

Probably we all admit that without argument, but being as good as one can be is no very accurate measure, so let's try and set a fairly definite minimum that is reasonably attainable.

Should Know Wire Sizes

A farmer should learn the significance of size of wire and a two and three wire circuit, 110 or 220 volts. That is important because when wires are installed, they should be of a size and number sufficient for both present needs and probable future requirements; and on circuits designed for light loads, such as illumination; or heavy loads such as grinding feed. Along with that, he should know about fuses; what they are for and why they come in different sizes. This knowledge is a safeguard from fire and inefficient operation and repairs.

So much for the minimum he should know about installing the wires. How much must he know about buying motors and appliances? My answer would be—not much—if he buys a standard brand from a reliable local dealer. Fortunately for us, the custom has become established in this country for local dealers to stand back of and service the equipment they sell, and the responsible manufacturers stand back of their local retail dealers. Their services and guarantee are part of the purchase price and you get the benefit of their engineering staff and research work and an experience the farmer can never expect to have. It is hopeless for the farmer to become an expert judge of the relative merits of different brands of equipment, so he might as well pass that one, and trust to a good trade-mark and his local dealer.

But here comes the final and hardest question to answer. Once a farmer does get a flock of motors and gadgets doing the work for him, how much of a repair man must he become to keep them operating? Right now, quite a good one. He cannot rewind a motor or repair a thermostat, but he can easily learn to clean a commutator and replace worn brushes. He can learn to oil and clean his apparatus and make minor adjustments and repairs before the larger and more complicated ones are needed. This will save him a lot of cash that would otherwise go to the service man, but will also keep his equipment in action.

Ask Power Co. for Help

In the past, and in most areas at the present time, the power companies have retained a rural service representative to help the farmers with all of these problems. If you are a customer, or a prospective customer of a power company, you are entitled to his help with no charge.

Yankee Doodle went to town
A-riding on his pony.
He'd put a sticker in his cap
That said "Swap Rides, old crony!"

SWAP RIDES
SAVE GAS • SAVE TIRES • DRIVE CAREFULLY!
NATIONAL SAFETY COUNCIL

Butter Without a Churn

A patent was issued recently to Prof. Peter A. van der Meulen of Rutgers University and David Levowitz of New Brunswick, N. J., on a new process of making butter. Instead of a churn they mix the cream with water, heat it and then run it through a separator. The outflow from the cream spout contains 80 per cent butterfat, which classes it as high grade butter.

Alaska's population of 72,524 includes 39,170 whites, 15,576 Eskimos, 11,283 Indians, 5,599 Aleuts, 263 Japanese, and 633 of unknown race, according to the 1940 Census.

Questions and Answers

Button-Hole Attachment

▶ **Question:** *Several times there has been reference to a button hole making attachment for sewing machines in* ELECTRICITY ON THE FARM. *I have been unable to find such an article for sale or where it may be obtained. I have a New Home machine and would like to know if one can be used on this make, also the price and where I can buy one.*
Mrs. J. E., Vt.

▶ **Answer:** The New Home Sewing Machine Company makes a buttonhole attachment for their sewing machine. The price is $10.00. They may be obtained from the New Home Sewing Machine Company, 127 East 28th Street, New York City. In ordering the attachment it will be necessary to give the model and serial number which is stamped on your machine and given in the instruction book. Other companies also have buttonhole attachments but they are not being made during the war and are scarce.

Electric Blanket Safe?

▶ **Question:** *Please give me information about the electric blanket. How long will one last? Are they dangerous? Will they ignite easily? I am suffering with poor circulation, therefore I sleep cold. Thought maybe an electric blanket would help.*
Mrs. E. G. W., Va.

▶ **Answer:** I cannot give you personal experience with an electric blanket, but I have talked with several people who have used them and based on what they have had to say, I don't know of any appliance which has resulted in any more personal comfort and satisfaction.

While visiting on a farm several weeks ago, near Poughkeepsie, N. Y., I found a lady who was troubled as you are with poor circulation and sleeping cold in spite of heavy bed covers. The electric blanket has been a Godsend to her.

These blankets meet code requirements for safety and there is practically no danger whatever from using them. They will not ignite and they have effective temperature controls which keep them from getting too warm.

The blankets have not been on the market long enough as yet to tell just how long they will last. Much will depend upon the care given them. They are well made and with reasonable care, should last for many years.

Cleaning Wool Before Marketing

▶ **Question:** *Please send me information about a device for cleaning burs and dirt from wool before sending it to market.*
J. F. F., Mo.

▶ **Answer:** The cleaning of burs and dirt from wool before sending it to market is not recommended. The machinery for doing this is expensive and it calls for skill in the separation of fleeces into their various parts according to fineness.

Information on the removal of burs and dirt from wool may be obtained from Proctor & Schwartz, 700 Tabor Road, Philadelphia, Pa.

Water Windlass

▶ **Question:** *What equipment would I need to draw water from an 80 ft. well with a ¼ hp. motor?*
A. C., Va.

▶ **Answer:** If I understand your question, you have an 80 ft. well from which you draw water with a rope and bucket and would like to use ¼ hp. motor to do this job for you.

The most satisfactory arrangement would, of course, be a deep well pump. You could also use one of the new Jet or Ejector pumps with the motor and pumping mechanism on the surface. If you merely want the motor to lift the bucket of water, you can lift a 5-gallon bucket of water from the well in 1 minute's time with your ¼ hp. motor. In order to get a hoisting speed of approximately 80 ft. per minute with a 1750 r.p.m. motor, you would need about a 2½" pulley on the motor driving a 12" pulley on a jack shaft and a 3" pulley on the same jack shaft driving a 24" pulley on the windlass. This assumes a drum on the windlass about 6" in diameter. Since the diameter of the drum would increase as the rope winds around it, you would probably need to use a 4½" or 5" diameter drum. It would also be necessary to have a clutch or some means of releasing this drum for dropping the bucket quickly into the well. To be on the safe side, you would also need some sort of device to cut off the motor and apply a brake when the bucket reached the top of the well.

Motor for Table Saw

▶ **Question:** *I would like to know in buying a motor for a saw table (10-inch saw) which type should I buy—a high speed or a heavy duty motor? Also where does repulsion induction come in?*
H. W. P., Maine

▶ **Answer:** You should use a repulsion-induction or capacitor type motor of 1740 rpm. to operate your saw. The repulsion-induction motor is an excellent all-around farm motor and will start heavy loads and take heavy overloads.

Refrigerator for Meat Storage

▶ **Question:** *I live on a Connecticut farm and am building a slaughterhouse. I would like to have some information on a icebox. How big a unit would I need for a box 12 x 14 ft. and 7 ft. high. Where could I buy the complete refrigeration unit? How much would it cost?*
W. B., Conn.

▶ **Answer:** You would probably need a one to one and one-half ton compressor unit for the refrigerator in your slaughter house. The size will depend upon the insulation used, the fit of the doors and the

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It's patriotic, it's practical and highly profitable to build your own brooder, using the tested and proven Trumbull Brooderator as the basic unit. Required materials cost less than $2.00. You can do the work in an hour or so. Guaranteed to do as good a brooding job as any brooder on the market.

Directions for making the brooder are packed with every Brooderator. Write us for complete details.

The TRUMBULL ELECTRIC MFG. CO
1012 Woodford Ave. Plainville, Conn.

"Keep 'em Frying"

If you are using a Monarch Range — write for free booklet entitled "How to Care for your Monarch Range"—mentioning the kind of fuel you use.

MALLEABLE IRON RANGE CO.
1243 Lake St. Beaver Dam, Wis.

MONARCH RANGES are built to last

amount of product put in.

There is a good bulletin on the subject of refrigerators put out by the University of Tennessee.

The General Electric Company, Refrigeration Department, Bloomfield, N. J.; the Westinghouse Company, East Pittsburgh, Pa.; the Frigidaire Company, Dayton, Ohio and the International Harvester Company, Chicago, Ill. all make refrigeration equipment. Their engineers would advise you regarding the size and cost of compressor unit needed.

You may have difficulty buying any refrigeration equipment. You will probably need a priority of A-3 or better to obtain it.

Air Lift Pump

▶**Question:** *I would like to have information on using a small compressor from an ice box machine to pump water out of a cistern by air. I have a ¼ hp electric motor to pull the compressor and need to get information on how to make the "jet" to get a steady flow of water.*

A. J. K., Miss.

▶**Answer:** One of the requirements of an air lift pump is that the vertical pipe be submerged from two to four times as deep below the surface of the water being pumped as the distance the water is to be raised from this same surface. In other words, if you had a 25 ft. lift from the water surface in the cistern, you would need to have your pipe extend from 50 to 100 ft. below the surface of the water. This would preclude the use of such a system in most cisterns.

The principle of the air lift pump is to mix air with the water at the bottom end of the submerged pipe in a proportion such that the column of mixed air and water up to the point of discharge will weigh less than the column of water outside of the pipe in the well or cistern. The air is introduced into the bottom end of the suction pipe through a small pipe leading down from the compressor on the surface. It is best to have the bottom of the suction pipe perforated with many small holes through which air is forced into the pipe from a jacket surrounding it and connected to the air line. Many small bubbles of air seem to be better than a few large ones.

The air pressure required will depend upon the depth of submergence. For 100 ft. of submergence, the pressure would have to be at least, 43 pounds per sq. in. or water would rise in the air pipe and cut off the air.

CLASSIFIED ADVERTISING

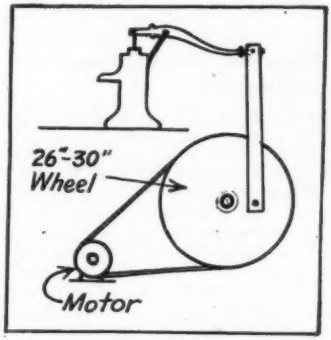
ELECTRICITY WITH THE LYON LINE can increase your production. Certain conditions, however, make prompt deliveries of some items impossible just now. Repairs, and parts for homemade brooders are receiving special attention. Literature on electric poultry supplies is available. LYON RURAL ELECTRIC COMPANY, Dept. E. F., Greensboro, N. C., or San Diego, California.

WRITE FOR FREE CATALOG DESCRIBING Brower's Electric Fan type Floor Brooders. 300 and 500 chick capacities. Only limited supply available—act quick! BROWER MFG. CO., Dept. N-64, Quincy, Ill.

Motor Drive for Pitcher Pump

▶**Question:** *How can I attach an electric motor to a pitcher pump in a shallow well?* L. F., Pa.

▶**Answer:** We would not normally recommend that you try to put a motor on a pitcher pump. It can be done as a matter of expediency in war time. It will require a little ingenuity on your part.



My suggestion would be that you use a wheel something like a bicycle wheel 26-in. to 30-in. in diameter or a disc made up of three pieces of plywood with a groove in the edge to accommodate a V belt, with an axle supported from one side. Use a 1½-in. pulley on your motor. Put a crank pin through the disc or wheel about 5-in. from the center. A wooden crank connected from this pin to a pin through a hole in the end of the pump handle will give you your up and down motion at about 86 strokes per minute.

You might also use an arrangement such as shown on page 15 of our January issue for operating a buck saw. The only change you would need would be to attach the operating lever in a horizontal position rather than a vertical position.

Manure Shredder

▶**Question:** *Could you give me the address of a company manufacturing a machine for shredding vegetables? We have installed a dehydrator for chicken manure. Works very successfully on straight droppings, but we have a lot of floor litter some contains corn cobs, straw, and what not that chokes up the worm conveyor.*

If you have any machine in mind that you think would do this work better than a vegetable shredder, I would very much appreciate you telling me about it.

C. L. J., New Jersey

▶**Answer:** If you wish to break up the cobs and straw in the poultry manure I would suggest that you try an ordinary farm hammer-mill with a screen having 1 in. holes or remove the screen entirely.

Vegetable shredders are made by the Merryway Co., Poughkeepsie, N. Y., and the Dison Specialties, Inc., 71 West 23rd St., New York City. The Gruendler Crusher & Pulverizer Co., 2900 N. Market St., St. Louis, Mo., make beet shredders and a variety of shredding machines.

What Ovens Require Vents?

▶**Question:** *Why is it necessary for electric and gas ranges to have oven vents? If it is necessary, why is it not necessary on wood and coal ranges?* J. L. P., N. C.

▶**Answer:** Oven vents are not necessary for electric or wood and coal ranges. In the case of the wood and coal range, the fire is outside of the oven and there are no products of combustion to be removed. With the electric range, there is no fire and no products of combustion to be removed. The gas oven does need a vent because the products of combustion have access to the oven.

When broiling is done in an electric oven, it is desirable to have ventilation to permit the steam to escape. This may be provided by a ventilator or by leaving the door open slightly.

For Mastitis

A new chemical tyrothricin developed by the Rockefeller Institute for Medical Research is offering promise in the treatment of mastitis caused by streptococcus—which is the cause of about 90 percent of mastitis.

Said the old woman to the boy milking a cow: "Young man, why aren't you at the front?"

"That isn't where the milk comes from."—U. S. D. A.

WAR PRODUCTION CONTEST

SUBJECT: *What Our Milk Cooler Does For Us*

★ RULES OF THE CONTEST ★

Explanation of the Subject: We want your own experience with an electric milk cooler —facts and figures on time, labor, milk and money saved or any other way in which your cooler has been and can be helpful to you in the production of more or better milk. Write it as if you were telling some other farmer who might benefit by your experience. Costs of operation, any increase in returns for milk, special methods of using the cooler you have found helpful would be pertinent.

First Prize: A $25 War Bond.

Second Price: $5 in War Stamps.

Five Prizes: Each $3 in War Stamps.

We will also pay $1 each in war stamps for any other entry published.

In addition $1 to $3 in war stamps will be paid for each photograph or sketch illustrating your statement and which we can use.

Winners will be announced in the May issue.

In case of a tie each winning contestant will receive the full prize to which he is entitled.

All members of the family may enter the contest, but each may submit only one statement.

The decision of the judges is final, and all entries become the property of this magazine.

Send your letter on a plain piece of paper, letterhead or postal card.

Mail entries to Wartime Contest Editor, ELECTRICITY ON THE FARM, 24 W. 40th Street, New York City. They must be postmarked **before** April 1.

JANUARY CONTEST WINNERS

The January contest was on the subject "Our Electric Brooder Helps in War Production." The judge's decision is that three persons tied for second prize and each is accordingly being awarded $5 in War Stamps. Part of the winning letters are published in this issue. Others will be published later. The winners are:

FIRST PRIZE—$25 WAR BOND

MRS. HOMER BOTKIN,
Route 1 East Liberty, Ohio

SECOND PRIZE WINNERS—$5 WAR STAMPS

MRS. W. O. LILLY,
R. 3, Box 504 Louisville, Ky.

MRS. L. A. ABBOTT,
R.F.D. 1 Morrison, Ill.

MRS. JOHN DESGRANGES,
R.R. 8 Defiance, Ohio

FIVE WINNERS OF $3 IN WAR STAMPS

HENRI HONTHAAS,
R. 2, Box 165H Escalon, Calif.

MRS. NORMAN DRYDEN, Eagleville, Tenn.

MRS. K. M. WEBB Allisonia, Va.

FRANCES McCUNE Formosa, Kans.

MRS. WILSON BEAVER,
R.R. No. 1 York, Nebr.

EXTRA AWARDS

Photograph, HENRI HONTHAAS, Escalon, Calif.

Drawing, MRS. L. A. ABBOTT, Morrison, Ill.

INFORMATION
Service for the Reader

As a reader of ELECTRICITY ON THE FARM you are entitled to our information service free of cost. Here is how it works.

Whenever you are seeking information about any piece of equipment or material, first look through the advertisements in this issue. They are your best guide.

Then, if you do not find what you want, just use the blank below to tell us your problem and we will see that you get the information you want. That's all there is to it. Easy, simple, and it costs absolutely nothing.

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Readers' Service Dept., 24 W. 40th St., New York

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